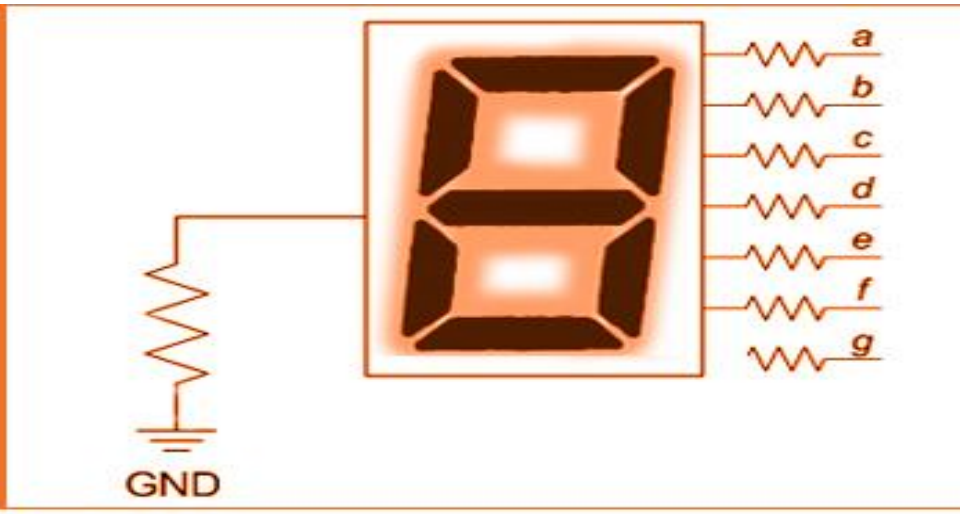
This document is owned by
www.pantechsolutions.net
Republishing or redistribution is prohibited

PANTECH SOLUTIONS®
Technology Beyond the Dreams

AVR HOW-TO GUIDE

Interfacing 7SEG with AVR Slicker



Contents at a Glance

AVR Slicker Board 3

Seven Segment Display 3

Interfacing Seven Segment Display 4

Interfacing Seven Segment with AVR Slicker 5

Pin Assignment with AVR.....5

Circuit Diagram to Interface 7 segment with AVR Slicker ..6

Source Code 6

C Program to 7 Segment Display using AVR 7

Testing the I2C – Seven segment with AVR.....10

General Information 11

Join the Technical Community Today!
http://www.pantechsolutions.net

AVR Slicker Board

The AVR Slicker board is specifically designed to help students to master the required skills in the area of embedded systems. The kit is designed in such way that all the possible features of the microcontroller will be easily used by the students. The kit supports In-system programming (ISP) which is done through Parallel/Printer port.

ATMEL's AVR (Atmega8535), AVR Slicker Kit is proposed to smooth the progress of developing and debugging of various designs encompassing of High speed 8-bit Microcontrollers.

Seven Segment Display

A **seven segment display** is the most basic electronic display device that can display digits from 0-9. The most common configuration has an array of eight LEDs arranged

Join the Technical Community Today!
http://www.pantechsolutions.net

in a special pattern to display these digits. They are laid out as a squared-off figure ‘8’.

Interfacing Seven Segment Display

Fig. 1 shows how to interface the seven segments with microcontroller. A seven segment is generally available in ten pin package. While eight pins correspond to the eight LEDs, the remaining two pins (at middle) are common and internally shorted. These segments come in two configurations, namely, Common cathode (CC) and Common anode (CA).

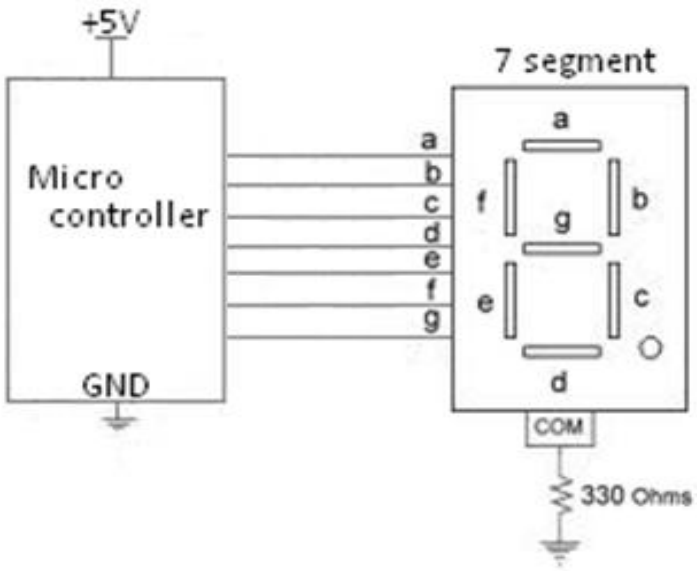


Fig. 1 Interfacing 7segment to Microcontroller

Join the Technical Community Today!
http://www.pantechsolutions.net

Interfacing Seven Segment with AVR Slicker

We now want to display a four digit number in AVR Slicker Board by using seven segment displays. The seven segment display is connected with ARV microcontroller.

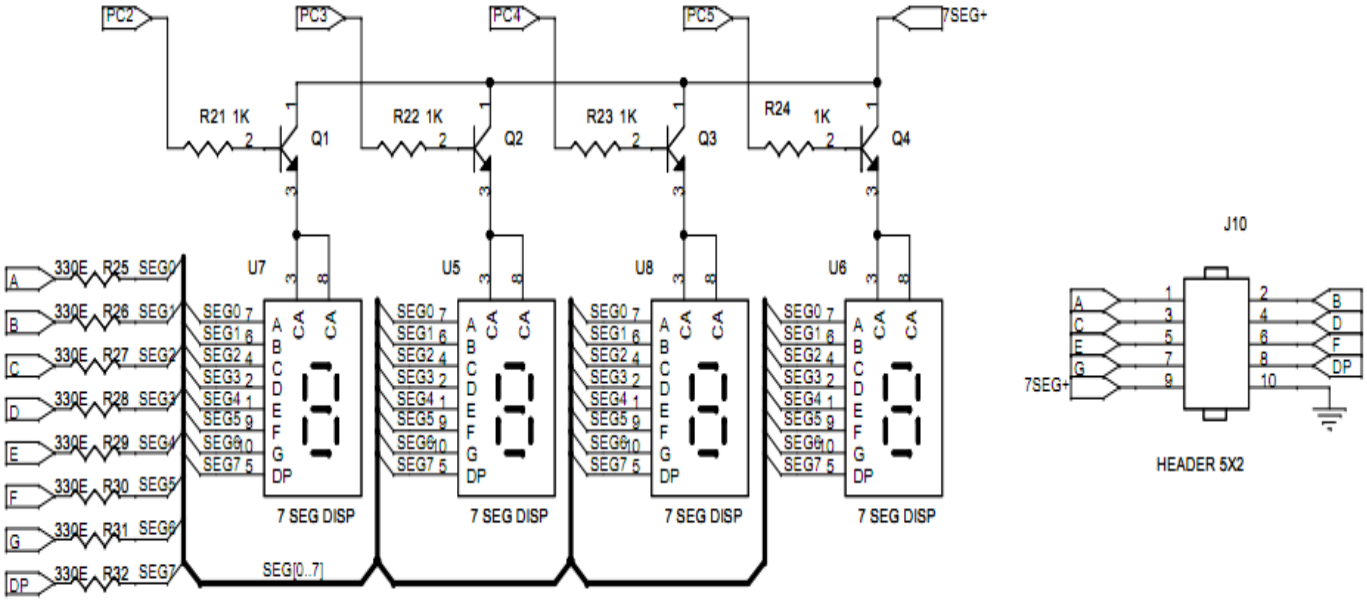
In **AVR Slicker Kit**, 4 nos. of common anode seven segment displays are controlled by seven segment drivers.

Pin Assignment with AVR

HARDWARE PIN OUT		CONNECTIONS	OUTPUT
CONTROL LINES		Connect PORTB with J10 via FRC Cable. J10 is at Seven Segment Section	Digits will be incrementing from 0 to 9999
Single	PORTC.3		
Ten	PORTC.5		
Hundred	PORTC.2		
Thousand	PORTC.4		
DATA LINES			
A	PORTB.0		
B	PORTB.1		
C	PORTB.2		
D	PORTB.3		
E	PORTB.4		
F	PORTB.5		
G	PORTB.6		
H	PORTB.7		

Join the Technical Community Today!
http://www.pantechsolutions.net

Circuit Diagram to Interface 7 segment with AVR Slicker



Source Code

The Interfacing seven segment displays with AVR program is very simple and straight forward, which display a four digit number in seven segment display .The C programs are developed in CodeVisionAVR. Here we are increment a counter and display this value loaded into seven segment driver in AVR Slicker Board.

Join the Technical Community Today!
http://www.pantechsolutions.net

C Program to 7 Segment Display using AVR

```
*********************************************************************************
        Title   : Program to Seven Segment display
*********************************************************************************

        #include <mega8535.h>
        #include <delay.h>

        #define CNTRL  PORTC
        #define DATA   PORTB

        int x;
        unsigned char thou=0,hun=0,ten=0,single=0;
        void send_seg(unsigned char,unsigned char,unsigned char,unsigned char);
        unsigned char a[10]={0xc0,0xf9,0xa4,0xb0,0x99,0x92,0x82,0xf8,0x80,0x90};
        unsigned char n=1;

        void main()
        {
                DDRB =0xff;
                DATA =0x00;
                DDRC =0xff;
                CNTRL=0x00;
                while(1)
                {
                        if(x == 150)
                        {
                                x=0;
                                single++;
                                if(single>9)
                                {
                                  single=0;
                                  ten++;
                                  if(ten>9)
                                  {
```

Join the Technical Community Today!
http://www.pantechsolutions.net

```
                    ten=0;
                    hun++;
                    if(hun>9)
                    {
                        hun=0;
                                thou++;
                                if(thou>9)
                                thou=0;
                    }
                  }
                }
            }
            x++;
            send_seg(thou,hun,ten,single);
        }
}

void send_seg(unsigned char thou,unsigned char hun,unsigned char ten,unsigned char single)
{
        if(n==1)
        {
        CNTRL=0x04;
        DATA=a[single];
        n=2;
        delay_ms(5);
        }
        else if(n==2)
                {
                  CNTRL=0x08;
                      DATA=a[ten];
                      n=3;
                      delay_ms(5);
                }
                else if(n==3)
                      {
                      CNTRL=0x10;
                      DATA=a[hun];
```

Join the Technical Community Today!
http://www.pantechsolutions.net

```
                n=0;
                delay_ms(5);
                }
        else
        {
            CNTRL=0x20;
                DATA=a[thou];
                n=1;
                delay_ms(5);
        }
}
```

To compile the above C code you need the CodeVision AVR software. The software has it's own IDE and built-in AVR gcc- Compiler. They must be properly installed and a project with correct settings must be created in order to compile the code. To compile the above code, the C file must be added to the project.

In CodeVision AVR software, you can develop or debug the project without any hardware setup. You must compile the code for generating HEX file. In debugging Mode, you want to check the port output without microcontroller Board.

Join the Technical Community Today!
http://www.pantechsolutions.net

The AVR Code Blaster software is used to download the hex file into your microcontroller through Parallel port.

Testing the I2C – Seven segment with AVR

Give +12V power supply to AVR Slicker Board; the four seven segment display is connected with the AVR Slicker Board. First check the entire seven segments LED's are properly working or not. Here we are display just 1234 in four seven segment. The entire seven segments receive it through Port lines & display it in order.

If any data is not coming in seven segments, then you just check the entire seven segments LED's are working or not. Change the seven segment driver IC & Check the I2C connections. Check the four seven segments connections. Otherwise you just check the code with debugging mode in CodeVisionAVR. If you want to see more details about debugging just see the videos in below link.

- How to create & Debug a Project in CodeVision AVR.

Join the Technical Community Today!
http://www.pantechsolutions.net

General Information

- For proper working use the components of exact values as shown in Circuit file. Wherever possible use new components.
- Solder everything in a clean way. A major problem arises due to improper soldering, solder jumps and loose joints.
- Use the exact value crystal shown in schematic.
- More instructions are available in following articles,
  - User Manual of AVR Slicker Board.
  - How to create & Debug a Project in CodeVision AVR.

Join the Technical Community Today!
http://www.pantechsolutions.net

Did you enjoy the read?

Pantech solutions creates information packed technical documents like this one every month. And our website is a rich and trusted resource used by a vibrant online community of more than 1, 00,000 members from organization of all shapes and sizes.

Join the Technical Community Today!
http://www.pantechsolutions.net

What do we sell?

Our products range from Various Microcontroller development boards, DSP Boards, FPGA/CPLD boards, Communication Kits, Power electronics, Basic electronics, Robotics, Sensors, Electronic components and much more . Our goal is to make finding the parts and information you need easier and affordable so you can create awesome projects and training from Basic to Cutting edge technology.

Join the Technical Community Today!
http://www.pantechsolutions.net